

We claim:

1. A process for transitioning from a first polymerization reaction using a first catalyst system to produce a first polymerization product to a second polymerization reaction producing a second polymerization product wherein the second polymerization reaction is incompatible with the first polymerization catalyst system or first polymerization product in a gas-phase reactor, comprising:
  - (a) after the first polymerization reaction, conducting multiple polymerization reactions in the gas-phase reactor using multiple polymerization catalyst systems, multiple reactor conditions and/or multiple feed streams to form multiple polymerization products;
  - (b) forming a substantially contaminant-free seedbed from each polymerization reaction by removing a portion of the polymerization product from each polymerization reaction and stripping or venting reactants and contaminants from each polymerization product;
  - (c) deactivating catalyst species entrained or contained with each polymerization product without contacting the polymerization product with excess deactivator;
  - (d) optionally, after the deactivation step, stripping or venting reactants and contaminants from each polymerization product;
  - (e) storing each substantially contaminant-free seedbed separately in a storage container under dry inert atmosphere to maintain each seed bed as substantially-free of contaminants;
  - (f) stopping each multiple polymerization reaction;
  - (g) removing the contents of each multiple polymerization reaction from the gas-phase reactor while preventing the introduction of additional or substantial contaminants;
  - (h) selecting a stored substantially contaminant-free seedbed that is compatible with the second polymerization reaction in regards to polymerization product or polymerization catalyst system;

(i) introducing the selected substantially contaminant-free seedbed into the gas-phase reactor while preventing the introduction of additional or substantial contaminants to the seedbed and reactor;

5 (j) introducing a second feed system into the gas-phase reactor;

(k) introducing a second catalyst system into the gas-phase reactor; and

(l) conducting the second polymerization reaction.

2. The process of claim 1, wherein each multiple or the first polymerization catalyst system comprises a Ziegler-Natta catalyst system, and the second polymerization catalyst system comprises a metallocene catalyst component.

10 3. The process of claim 1, wherein the step of removing the contents of each multiple or the first polymerization system comprises removing greater than 95% by volume of the reactor contents through a discharge outlet.

15 4. The process of claim 1, wherein the step of stopping each multiple or the first polymerization reaction comprises adding a catalyst killer to the first polymerization reaction.

20 5. The process of claim 1, wherein each substantially contaminant free seedbed comprises less than 100 parts per million of contaminants.

25 6. The process of claim 1, wherein the stripping or venting of reactants and the deactivation of catalyst species are accomplished in separate process units or equipment.

30 7. The process of claim 1, wherein the reactor is maintained as a substantially closed system during the introduction of the selected substantially contaminant-free seedbed.

8. The process of claim 1, wherein the reactor is maintained as a substantially closed system during removal of product from each multiple or the first polymerization reaction and during the introduction of the selected substantially contaminant-free seedbed by not opening the reactor to the atmosphere.

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9. The process of claim 1, wherein the reactor is maintained as a substantially closed system during removal of product from each multiple or the first polymerization reaction and during the introduction of the selected substantially contaminant-free seedbed by providing sufficient pressure in the reactor to prevent entry of contaminants from the atmosphere.

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10. The process of claim 1, wherein the reactor is maintained as a substantially closed system during removal of product from each multiple or the first polymerization reaction and during the introduction of the substantially contaminant-free seedbed by using at least one condensing inducing agent in an amount greater than or equal to 20 percent by volume in the reactor.

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11. The process of claim 1, wherein at least one of each multiple polymerization reaction, the first polymerization reaction or the second polymerization reaction is conducted in condensing mode.

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12. The process of claim 1, wherein each multiple polymerization reaction, the first polymerization reaction and the second polymerization reaction are conducted in condensing mode.

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13. The process of claim 11 or 12, wherein a condensing inducing agent is used.

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14. The process of claim 10 or 13, wherein the condensing inducing agent is isopentane.

15. The process of claim 1, wherein steps (a) through (e) are conducted continuously, without interruption until sufficient quantities of each substantially contaminant-free seed bed are stored for the second polymerization.

5 16. The process of claim 1, wherein step (d) is performed following step (c) or steps (b) and (c) are performed simultaneously and step (d) is not performed.

17. The process of claim 1, wherein the second polymerization comprises the first polymerization catalyst.

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18. The process of claim 1, wherein the second polymerization comprises the first polymerization product.